

SDMS Doc ID 2037390



# California Regional Water Quality Control Board

North Coast Region

William R. Massey, Chairman

Winston H. Hickox  
Secretary for  
Environmental  
Protection

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Gray Davis  
Governor

2037390

July 21, 2003

Ms. Brenda Pedersen, Project Manager  
United States Army Corp of Engineers  
1325 J Street  
Sacramento, CA 95814

Dear Ms. Pedersen:

Subject: Request for a Technical Report on Emergent Chemicals Sources and Sampling  
for the Former Santa Rosa Army Airfield

File: USSRAAF, 2200 Airport Boulevard, Santa Rosa, California  
Case No. 1TSO457

California Regional Water Quality Control Board (Regional Water Board) requests your assistance in identifying potential sources of emergent chemicals of concern in soil, groundwater and/or surface water.

Former and active military facilities need to be assessed for the presence of emergent chemicals at any potential areas of concern (AOC), installation restoration (IR) and operable unit (OU) sites within the facility which include, but are not limited to:

## Potential Source Areas for Emergent Chemicals Associated with Explosives

- Ordnance detonation/disposal sites,
- Missile/rocket test sites and launch pads,
- Catch basins, waste sumps, clarifiers, and settling ponds,
- Decommissioned missile silos,
- Suspected areas where chemicals and pesticides were stored, used, transferred, processed, incinerated, or disposed,
- Firing and bombing ranges, and
- Mock battle training locations.

## Potential Source Areas for Emergent Chemicals Associated with Solvent Release Sites

- Catch basins, waste sumps, clarifiers, and settling ponds,
- Paint maintenance, hobby shops, plating shops, and degreasing activities,
- Weapons maintenance or cleaning areas,

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- Known release sites, as appropriate, and
- Suspected areas where these chemicals and pesticides were stored, used, transferred, processed, incinerated, or disposed.

In order to identify potential sources of emergent chemicals, please prepare and submit a Source Evaluation Report for Regional Water Board and DTSC review, by **September 30, 2003**. At a minimum, the Source Evaluation Report should include the following:

1. Property ownership and land use history from original land grant,
2. Locations where emergent chemicals were used and stored on-site,
3. Location and time specific quantities of emergent chemicals used, if available,
4. Handling and storage procedures for the use of emergent chemicals and emergent chemical wastes used and/or generated on site,
5. Emergent chemical data from soil, surface water, and groundwater already collected, and
6. Schedule for when environmental samples will be collected at sites with no existing soil, surface water and groundwater data on emergent chemicals.

If this facility has no potential sources, that information will need to be included in the Source Evaluation Report.

Following the review of the Source Evaluation Report, a determination will be made by the Regional Water Board and/or DTSC staff whether emergent chemical samples for analysis is needed at this facility. If it is determined that a sampling proposal is required, the following will need to be included:

1. Locations, numbers, and identity of proposed wells, surface water locations, and treatment systems to be sampled,
2. The rationale for sampling the selected wells,
3. Proposed soil sampling locations and rationale,
4. A brief description of the methodology proposed to be used to collect the soil and/or water samples, and
5. A schedule for sampling these soils, surface waters and wells.

The emergent chemicals include perchlorate, n-nitrosodimethylamine (NDMA), 1,4-dioxane, 1,2,3-trichloropropane, chromium VI, and polybrominated diphenyl ether (PBDE). These emergent chemicals have acute to chronic health effects in humans, even those found at very low concentrations, i.e. nanograms/Liter (parts per trillion (ppt)). In addition, some of these chemicals are suspected carcinogens.

The following table lists the emergent chemicals of concern, the recommended test method for each specified chemical, and the recommended reporting limit for the chemical analysis:

Emergent Chemical	Acceptable Test Method <sup>1</sup>	Reporting Limit
Perchlorate	USEPA Method 314.0	4 µg/L
N-Nitrosodimethylamine (NDMA)	USEPA Method 1625	0.002 µg/L

<sup>1</sup> These test methods may require modification, e.g. selected ion monitoring, to achieve the recommended reporting limits.

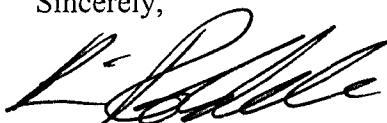
1,4-Dioxane	USEPA Method 8270	2 µg/L
1,2,3-Trichloropropane	USEPA Method 524.2	0.005 µg/L
Total/Hexavalent Chromium	USEPA Method 200.8/218.6	1 µg/L/0.3 µg/L
Polybrominated Diphenyl Ether	USEPA Method 8270	2 µg/L

The chemical analysis must be performed by a California Certified Laboratory.

Two attachments are enclosed for your information. The first is a copy of the June 6, 2003 letter from the California Environmental Protection Agency (CalEPA), which expresses concerns about the emergent chemicals and requests your cooperation in this investigation. Enclosure 2 provides additional information on the various emergent chemicals.

Please contact me at (707) 576-2667 or via Email at [Rolab@rbl.swrcb.ca.gov](mailto:Rolab@rbl.swrcb.ca.gov), should you have any questions.

Sincerely,



Bonnie Rolandelli  
Engineering Geologist

BAR:clh/ussraafemergentchemicals

Enclosures:

1. CalEPA Letter Dated June 6, 2003
2. Emergent Chemical Information

cc: State Water Resources Control Board, Office of Chief Counsel, Regional Water Board  
Attorney  
California Department of Toxic Substances Control, Facility Project Manager  
California Department of Toxic Substances Control, Mr. Tony Landis (N. CA)  
Mr. Kevin Mayer, SFD-2, USEPA REGION 9, 75 Hawthorne Street, San Francisco, CA  
94105

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Agency Secretary  
Cal/EPA

State of California  
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ENCLOSURE 1

Arvin  
Governor



Air Resources Board | Department of Pesticide Regulation | Department of Toxic Substances Control

Integrated Waste Management Board | Office of Environmental Health Hazard Assessment | State Water Resources Control Board | Regional Water Quality Control Board

June 6, 2003

Mr. John Paul Woodley, Jr.  
Assistant Deputy Under Secretary  
of Defense for Environment  
Department of Defense  
3400 Defense Pentagon  
Washington, D.C. 20301-3400

Dear Mr. Woodley:

We are writing to seek the cooperation of the Department of Defense (DoD) in addressing perchlorate contamination at DoD's active, closed, and historic military and contractor facilities in California on behalf of my office, the California Environmental Protection Agency (Cal/EPA) and Cal/EPA's Department of Toxic Substances Control (DTSC) and State Water Resources Control Board (SWRCB). The potential sources of perchlorate contamination include facilities that manufacture, conduct research on, and use solid propellants for rockets, missiles, military ordnance, and pyrotechnics. Military and defense contractor facilities are among the known and suspected sources of contamination of this type.

We cannot overstate the seriousness of this problem for the State of California. To date, perchlorate has been detected in more than 300 wells, including public water supply wells. The loss of drinking water supply wells to perchlorate contamination may leave parts of California without sufficient water for the summer months. In response to this crisis, the California Legislature is expressing its interest in finding the sources and solutions to these impacts to the State's water by holding hearings on the matter.

Our efforts to address perchlorate contamination in California warrant a collaborative approach to this environmental crisis. Together, we need to identify sources of perchlorate contamination, coordinate research of treatment strategies and technologies, and eventually clean up both impacted drinking water and water used for other beneficial uses.

Cal/EPA and its constituent boards and departments need to extend this coordinated approach to DoD to address perchlorate and other emerging chemicals of concern emanating from military properties. To that end, the Regional Water Quality Control Boards have coordinated with the SWRCB in preparing a letter to military installations in California requesting assistance in identifying, investigating, and cleaning up sources of

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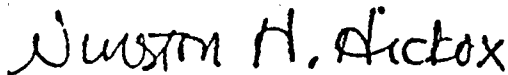
Mr. John Paul Woodley, Jr.  
June 6, 2003  
Page 2

perchlorate and other chemicals of concern on their properties. We have enclosed a copy of this draft letter for your information.

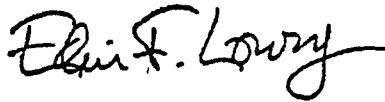
We ask that you direct the installations and appropriate program managers in DoD to assist and cooperate in this effort. In addition, we understand that DoD conducted a national survey of perchlorate contamination on military facilities, and we would request the opportunity to review the results of this survey for installations in California.

Both DTSC and SWQCB representatives are available to meet with you or your staff to further discuss this issue. Should you have any questions or need further assistance, please contact Mr. Frederick S. Moss, Chief, Office of Military Facilities, DTSC, at (916) 255-3750 or Ms. Lisa Babcock, Chief, Land Disposal Section, SWRCB, at (916) 341-5687.

Sincerely,



Winston H. Hickox  
Agency Secretary



Edwin F. Lowry  
Director  
Department of Toxic  
Substances Control



Celeste Cantú  
Executive Officer  
State Water Resources  
Control Board

Enclosures

cc: See next page.

**Perchlorate** ( $\text{ClO}_4$ ) originates as a contaminant in the environment from the inorganic salts of ammonium, potassium, magnesium or sodium perchlorate. This pollutant is exceedingly mobile in aquifer systems. It can persist for many decades under typical groundwater and surface water conditions, because of its resistance to react with other available constituents. Perchlorate is among a group of unregulated chemicals requiring monitoring pursuant to Title 22, California Code of Regulations § 64450. The California Department of Health Services (DHS) action level for Perchlorate is 4  $\mu\text{g/L}$ .

**N-Nitrosodimethylamine**, is also known as NDMA ( $\text{C}_2\text{H}_6\text{N}_2\text{O}$ ), a product from the decomposition of unsymmetrical dimethyl hydrazine, a component used in the production of rocket fuel (Aerozine 50). This chemical is used as an additive in liquid propellant fuel for rocket engines. NDMA is used primarily in research (NTP, 2000), but it can also be formed inadvertently in a number of industrial processes. NDMA is identified as a carcinogen under California's Health and Safety Code Section 25249.5, *et seq.*, and the Safe Drinking Water and Toxic Enforcement Act of 1986 ("Proposition 65"). In addition, the USEPA identifies NDMA as a "probable human carcinogen" (USEPA, 1997). The California (DHS) action level for NDMA is 10  $\text{ng/L}$ .

**1,4-Dioxane** is used as a stabilizer for chlorinated solvents or volatile organic compounds (VOCs), particularly 1,1,1-trichloroethane approximately 90% of the 1,4-dioxane produced. Releases of chlorinated solvents or VOCs may be a primary source of 1,4-dioxane in the environment. 1,4-dioxane has a high potential for entering the environment due to its volatility and solubility in water. Spent chlorinated solvents disposed of improperly can contaminate ground and surface water, and 1,4-dioxane has been detected in surface waters throughout the United States. Exposure to small amounts of 1,4-dioxane may lead to significant adverse health effects. The primary routes of exposure include inhalation, ingestion and dermal contact. USEPA has classified 1,4-dioxane as a Group B2, probable human carcinogen of low carcinogenic hazard. The California (DHS) action level for 1,4-Dioxane 2  $\mu\text{g/L}$ .

**1,2,3-Trichloropropane (TCP):** This chemical has been used primarily as a solvent and extractive agent. As a solvent, it has commonly been used as a paint and varnish remover, a cleaning and degreasing agent and a cleaning and maintenance solvent. TCP is not a naturally occurring chemical. Releases to the environment are likely to occur as a result of its manufacture, formulation, and use as a solvent and extractive agent, paint and varnish remover, cleaning and degreasing agent, cleaning and maintenance reagent, and chemical intermediate. TCP is also used as a pesticide in the formulations with dichloropropenes in the manufacture of D-D, a soil fumigant. 1,2,3-Trichloropropane (TCP) is *reasonably anticipated to be a human carcinogen* based on sufficient evidence of malignant tumor formation at multiple sites in multiple species of experimental animals. The California (DHS) action level for 1,2,3 TCP is 0.005  $\mu\text{g/L}$ .

**Hexavalent Chromium:** This chemical is a dissolved heavy metal that is or has been used in industrial processes, such as metal plating and as a corrosion inhibitor in cooling tower water. Chromium VI is a known human carcinogen. Chromium VI detection in drinking water wells has resulted in well closures. There is no Federal or State regulatory standard for chromium VI. However, California Senate Bill 351 proposes to have one in place starting January 1, 2004. For now, the regulatory standards being used apply only to total chromium, the combined concentrations of chromium III and chromium VI. The risk-based California drinking water standard or maximum contaminant level (MCL) of 50  $\mu\text{g/L}$  has been established for total chromium (chromium III and chromium VI).

**Polybrominated Diphenyl Ether (PBDE):** A family of flame-retardants used in polyurethane foam, textiles, and plastic electronic casings. This chemical bioaccumulates in marine mammals, birds, and humans. No actions levels are currently available.